

REMARKS

In the office action mailed April 23, 2007 (the "Office Action"), the Examiner rejected claims 1, 4-8, 10-13, 18-20, 22-24, 27-31, 33-36, 41-43, and 45-50 as being unpatentable over U.S. Patent No. 6,578,005 to Lesaint et al. (the "Lesaint patent") in view of U.S. Patent Application Publication No. 20010049619 to Powell et al. (the "Powell application"). The Examiner also rejected claims 14-17 and 37-40 under 35 U.S.C. 103(a) as being unpatentable over the Lesaint patent, in view of the Powell application in further view of U.S. Patent No. 5,615,121 to Babayev et al. (the "Babayev patent").

Claims 1, 6, 13, 24, 29, 36, and 47 have been amended to more clearly recite the invention as claimed in the present application. Claims 1, 6, 13, 24, 29, 36, and 47 are patentable over the Lesaint patent in view of the Powell application because the combined teachings of the cited references fail to teach or suggest the combination of limitations recited by the claims.

For example, with reference to claims 1 and 24, neither the Lesaint patent nor Powell application, alone or in combination, teach or suggest a method for scheduling splittable work orders that includes determining an appointment window on a first day during which a portion of the service to complete the work order may be scheduled, the appointment window being for the split time in duration, determining at least one appointment window on a subsequent day or days during which the remainder of the service to complete the work order may be scheduled, and for each operation of determining, determining whether a booking pattern is associated with the order and determining appointment windows as a function of any associated booking patterns, the booking patterns having respective working periods, in response to a splittable work order booking the amount of time for the splittable work order in a window partially overlapping a working period proportionally to the amount of overlap between the partially overlapping window and the working period. The Lesaint patent does not teach the manner in which time is scheduled to an appointment window that overlaps a allowable working window of a booking pattern, as is recited in claims 1 and 24. Similarly, the Powell application fails to describe apportionment of time of a splittable order to overlapping appointment windows and allowable working windows.

With reference to claims 6, 13, 29, and 36, neither the Lesaint patent nor Powell application, alone or in combination, teach a method for scheduling splittable work orders that includes, among other things, scheduling the appointment in the specific appointment window on the first day when the validation indicates the appointment can be scheduled given the

scheduling constraints and projected service resources, in response to the specific appointment window overlapping the allowable appointment window, time for the appointment scheduled in the specific appointment window proportionally to the amount of overlap between the specific appointment window and the allowable appointment window. The Examiner cites to col. 14, lines 24-36 as teaching scheduling constraints. However, the cited material does not discuss apportionment of the appointment for overlapping appointment windows and allowable appointment windows. The Lesaint patent does discuss scheduling an order only if the task can be split, however, but does not describe how the time for the appointment is split over the overlap. The only mention of "proportion" in the Lesaint patent is with respect to determining whether the time that potentially could be scheduled is "greater than a predetermined minimum." See col. 14, lines 30-34. The Lesaint patent discloses a condition under which a task can be scheduled, but does not disclose how the time for the task that is split will be scheduled in the overlapping appointment windows. The Powell application, as previously discussed with reference to claims 1 and 24, does not describe apportionment of time of a splittable order to overlapping appointment windows and allowable working windows.

With reference to claim 47, neither the Lesaint patent nor Powell application, alone or in combination, teach a server computer system having an order scheduling component that includes a system tables component having booking constraints against which the requested orders are scheduled and the scheduling component is further operable to determine appointment windows as a function of any associated booking constraints, the booking constraints having respective working periods, in response to a splittable work order, booking the amount of time for the splittable work order in a window partially overlapping a working period proportionally to the amount of overlap between the partially overlapping window and the working period. As previously discussed with reference to claims 1 and 24, the Lesaint patent does not teach the manner in which time is scheduled to an appointment window that overlaps a allowable working window of a booking pattern and the Powell application fails to describe apportionment of time of a splittable order to overlapping appointment windows and allowable working windows.

Claims 1, 6, 13, 24, 29, 36, and 47 are further patentable over the Lesaint patent in view of the Powell application because the combined teachings of the cited references fail to teach or suggest other limitations recited by the claims, as well.

Claims 1, 6, 47 recite, in pertinent part, a particular set of appointment windows included in the window hierarchy, namely, an all day appointment window, aggregate

appointment windows, and basic appointment windows. Claims 1, 24, and 47 recite, in pertinent part, the particular relationship between the defined appointment windows. The Examiner argues that a window hierarchy is disclosed by the Powell reference. See the Office Action at page 4. The Lesaint patent is cited by the Examiner as teaching a window hierarchy including an all day appointment window, aggregate appointment windows, and basic appointment windows is taught by Lesaint. See the Office Action at pages 18-19.

The Examiner argues that the bands 20 of time windows described in the Powell reference and shown in Figure 2 represent assignment of a window hierarchy to each area. See the Office Action at page 4. As discussed in the previously filed responses, bands 20-26 of concentric circles around a central depot represent different ranges of time. It is assumed that field technicians leave from the central depot at the beginning of a work day and return to it at the end of the workday. The example described in the Powell reference at paragraph 41 uses two-hour bands of time, with later time ranges assigned to the bands further out from the central depot. A customer request is scheduled by identifying the band in which the customer is located. The time range associated with the band in which the customer is located is used as the time window for scheduling the customer request.

The Examiner further argues that the "window hierarchy" described by the Powell reference would be modified by teachings of the Lesaint patent to teach or suggest a window hierarchy that includes an all day appointment window, aggregate appointment windows, and basic appointment windows. The Examiner cites to material in columns 17, 21, and 22 of the Lesaint patent for support of the argument. See the Office Action at pages 4 and 5. The material in column 17 does not describe an all day appointment window or aggregate appointment windows, but describes the effect of moving scheduled appointments during optimization has on calculation of an objective function. The particular objective function described in the cited material is a "simulating annealing" model. See col. 16, lines 23-29. The material that purportedly describes an "all day appointment window" actually describes a particular example of moving two tasks to save ten minutes, and the resulting improvement (i.e., reduction) in the scheduling cost. See col. 17, lines 30-38. The cited material does not describe any type of all day appointment window. The material that the Examiner cites as teaching aggregate appointment windows actually describes an example of calculating a value (i.e., the ratio of the difference between the expected time of meeting the target and the target itself, and the maximum time that the expected time may exceed the target) that is used in the objective

function. The particular example identifies a first task that is already scheduled to begin between 10:30 a.m. and 1:00 p.m. with an expected arrival time of 11:30 a.m., and a second task that has the same ratio as the first task, but is to be completed by 5:00 p.m. but is expected to be completed between 12:00 p.m. and 2:00 p.m. The material does not describe any appointment windows that are analogous to an aggregate appointment window.

The material cited by the Examiner at columns 21 and 22 also fails to describe aggregate and basic appointment windows. The cited material describes an example with reference to Figure 6 of assigning a task to an appointment time slot between 8:00 a.m. and 10:00 a.m. and calculating an objective score (column 21), and the process of examining all positions in a tour until a valid position for a task having an appointment time is found. See col. 21. The validity of each position is determined by reference to the appointment time slot of the task. See *id.* None of this material describes any appointment windows that are analogous to aggregate appointment windows (e.g., morning or afternoon) or basic appointment windows (e.g., 9 a.m. to 11 a.m., or 1 p.m. to 2 p.m.).

Despite the Examiner's assertion, the Lesaint patent does not teach a window hierarchy as recited by claims 1, 24, and 47.

Additionally, as previously discussed, the "window hierarchy" identified in the Powell reference by the Examiner are concentric circles of time bands centered around a central depot. The "all day appointment window and aggregate appointment windows" identified in the Lesaint patent by the Examiner are examples of scheduled tasks. No one ordinarily skilled in the art would be motivated to combine the particular examples of the Lesaint patent with the concentric time bands of the Powell reference because doing so would result in an inoperable scheduling system. The Powell reference provides examples of the time bands for the concentric rings shown in Figure 2. The example tasks described in Lesaint are not associated with any geographic location. Modifying the concentric rings of the Powell reference to include the tasks already scheduled as described in the Lesaint patent would create *inconsistency* with the time assignment for each band if the tasks are not geographically located according to the concentric rings. For example, the task beginning between 10:30 and 1:00 p.m. would modify the concentric ring corresponding to the time range, only if the geographic location of the task fits within the assigned time bands of the concentric rings. If, however, the task is located nearer or further away than the band assigned to cover that time range, all of the time ranges of the bands would need to be modified, which may create inconsistencies between other tasks that are

appropriately assigned to the concentric bands. Thus, no one ordinarily skilled in the art would combine the teachings identified by the Examiner due to the resulting inoperability.

Moreover, the combination of the teachings of the Lesaint patent and the Powell reference do not teach or suggest the relationship of the all day appointment window, the aggregate appointment windows and the basic appointment windows. As recited in claims 1, 24, and 47, some of the basic appointment windows are grouped into aggregate appointment windows and aggregate appointment windows and remaining basic appointment windows are grouped into the all day appointment window. As described in the present application at paragraph 23 and illustrated in Figure 4 (with reference to U.S. Patent Application Publication No. 2002/0010610), a window hierarchy is a set of appointment windows that is grouped to form the window hierarchy. In one embodiment, referencing Figure 4, the set of appointment windows includes an all day appointment window (e.g., from 8 a.m. to 6 p.m.), aggregate appointment windows (e.g., the morning or afternoon), and basic window appointments (e.g., 9 a.m. to 11 a.m., or 1 p.m. to 2 p.m.). Customers are hierarchically offered the different appointment windows by a customer service representative (CSR) in the order of an all day appointment, and if the appointment is not acceptable, the CSR offers an aggregate window appointment, and then finally a basic window appointment. As further described for the embodiment described at paragraph 23 and illustrated in Figure 4, the basic building blocks of the Window Hierarchy are a set of contiguous basic windows that span the working day. Subsets of these basic windows are grouped into larger aggregate windows. The aggregate windows and any basic windows not belonging to an aggregate window are grouped into an all day window. Neither the Powell reference or the Lesaint patent teach the appointment window relationship recited in claims 1, 24, and 47.

In summary, claims 1, 24, and 47 are additionally patentable over the Lesaint patent in view of the Powell reference because neither the Lesaint patent or the Powell reference describe the limitation of a window hierarchy including an all day appointment window, aggregate appointment window, and basic appointment windows. Claims 1, 24, and 47 are further patentable because the teachings of a "window hierarchy" identified in the Powell reference by the Examiner would not be modified according to the teachings of "an all day appointment window, aggregate appointment windows and basic appointment windows" described in the Lesaint patent application. Finally, even if the Examiner's characterization are assumed to be accurate for the sake of argument, and one ordinarily skilled in the art would be

motivated to combine the teachings of the Lesaint patent and the Powell reference, the resulting combination fails to describe an appointment window relationship where basic appointment windows are grouped into aggregate appointment windows and aggregate appointment windows and remaining basic appointment windows are grouped into the all day appointment window as recited in claims 1, 24, and 47.

Claims 6, 13, 29, and 36 are additionally patentable because the combined teachings of the Lesaint patent and the Powell reference do not teach or suggest defining the splittable work order as having a job duration *required* to complete the splittable work order over a *plurality of different days*.

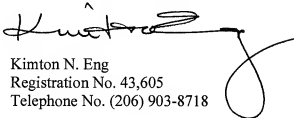
The Examiner argues that the Lesaint patent teaches splittable work orders as recited in claims 6, 13, 29, and 36. See the Office Action at pages 5, 10, and 14. However, the “splittable work order” described in the Lesaint patent is conditionally split between two days. In particular, “*if* a task could overrun an individual’s overtime limit *then* it is only scheduled if the task can be split.” See col. 14, lines 30-33, see also col. 24, lines 1-3. As described in the Lesaint patent, a task is split only if it violates an overtime limit. Otherwise, “[i]f the task may be completed within an individual’s overtime limit then it may be scheduled by the pre-scheduler.” See col. 14, lines 28-30. That is, the task will be scheduled to be completed in one day. In contrast, the “splittable order” recited in claims 6, 13, 29, and 36 are required to be split over a plurality of different days, unlike the task split in the Lesaint patent. The Powell reference also fails to describe a “splittable order” as recited in claims 6, 13, 29, and 36.

For the foregoing reasons, claims 1, 6, 13, 24, 29, 36, and 47 are patentable over the Lesaint patent in view of the Powell reference, and the Examiner’s rejection of these claims under 35 U.S.C. 103(a) should be withdrawn. Claims depending from claims 1, 6, 13, 24, 29, 36, and 47 are also patentable based on their dependency from a respective allowable base claim, and the rejection of the dependent claims under 35 U.S.C. 103(a) should also be withdrawn.

All of the pending in the present application are in condition for allowance.
Favorable consideration and a timely Notice of Allowance are earnestly solicited.

Respectfully submitted,

DORSEY & WHITNEY LLP

A handwritten signature in black ink, appearing to read 'Kimton N. Eng', with a large, stylized loop at the end.

Kimton N. Eng
Registration No. 43,605
Telephone No. (206) 903-8718

KNE:alb

DORSEY & WHITNEY LLP
1420 Fifth Avenue, Suite 3400
Seattle, WA 98101-4010
(206) 903-8800 (telephone)
(206) 903-8820 (fax)

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